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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,797	03/18/2004	Masanobu Takashima	Q80126	5076

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EXAMINER	
SHAH, MANISH S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 08/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/802,797	TAKASHIMA ET AL.	
	Examiner	Art Unit	
	Manish S. Shah	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

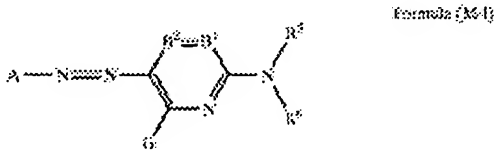
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-4 & 6-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanouchi et al. (# US 2002/0107301 A1) in view of Landry-Coltrain et al. (# US 2003/0138605 A1).

Yamanouchi et al. discloses:

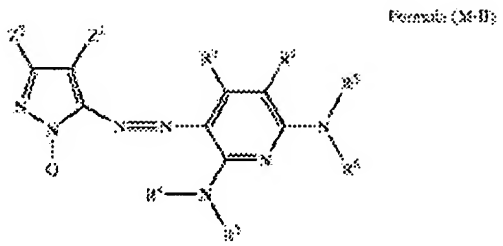
{Claim 1}. An ink-jet recording method using an ink set for forming an image on an ink-jet recording medium ([0414]; see Examples), wherein: the ink-jet recording medium comprises a support and an ink-receiving layer which comprises a sulfur-containing compound ([0415]-[0453]) and is disposed on the support; the ink set comprises a yellow ink comprising a yellow dye, a magenta ink comprising a magenta dye, and a cyan ink comprising a cyan dye; and the magenta dye has an oxidation potential of higher than 0.8 V (vs SCE) ([0241], [0022]-[0034]).

{Claim 2}. The magenta dye is represented by the following formula (M-I):



wherein A represents a residue of a 5-membered heterocyclic diazo component A-NH2; B1 and B2 represent --CR1= and --CR2=, or alternatively one of B1 and B2 represents a nitrogen atom and the other represents --CR1= or --CR2=; R5 and R6 each independently represent one selected from the group consisting of a hydrogen atom, aliphatic groups, aromatic groups, heterocyclic groups, acyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, carbamoyl groups, alkyl or aryl sulfonyl groups, and sulfamoyl groups, and the groups may have a substituent; G, R1 and R2 each independently represent one selected from the group consisting of a hydrogen atom, halogen atoms, aliphatic groups, aromatic groups, heterocyclic groups, a cyano group, a carboxyl group, carbamoyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, heterocyclyloxycarbonyl groups, acyl groups, a hydroxy group, alkoxy groups, aryloxy groups, heterocyclyloxy groups, silyloxy groups, acyloxy groups, carbamoyloxy groups, alkoxycarbonyloxy groups, aryloxycarbonyloxy groups, amino groups, acylamino groups, ureido groups, sulfamoylamino groups, alkoxycarbonylamino groups, aryloxycarbonylamino groups, alkyl or aryl sulfonylamino groups, heterocyclylsulfonylamino groups, a nitro group, alkyl or aryl thio groups, alkyl or aryl sulfonyl groups, heterocyclylsulfonyl groups, alkyl or aryl sulfinyl groups, heterocyclylsulfinyl groups, sulfamoyl groups, a sulfo group, and heterocyclylthio groups, and the groups may have a substituent; and R1 and R5, or R5 and R6 may bond together to form a 5- or 6-membered ring ([0102]-[0109]).

{Claim 3}. The ink-jet recording method of claim 1, wherein the magenta dye is represented by the following formula (M-II):



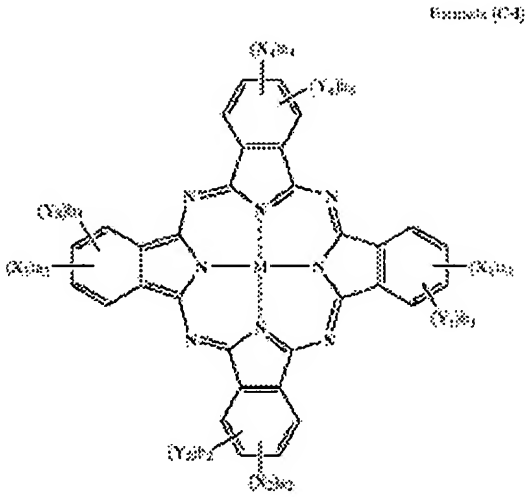
wherein Z1 represents an electron-withdrawing group having a Hammett's substituent constant .σ_p of 0.20 or more; Z2 represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group; R1 and R2 each independently represent one selected from the group consisting of a hydrogen atom, halogen atoms, aliphatic groups, aromatic groups, heterocyclic groups, a cyano group, a carboxyl group, carbamoyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, heterocyclyloxycarbonyl groups, acyl groups, a hydroxy group, alkoxy groups, aryloxy groups, heterocyclyloxy groups, silyloxy groups, acyloxy groups, carbamoyloxy groups, alkoxycarbonyloxy groups, aryloxycarbonyloxy groups, amino groups, acylamino groups, ureido groups, sulfamoylamino groups, alkoxycarbonylamino groups, aryloxycarbonylamino groups, alkyl or aryl sulfonylamino groups, heterocyclylsulfonylamino groups, a nitro group, alkyl or aryl thio groups, alkyl or aryl sulfonyl groups, heterocyclylsulfonyl groups, alkyl or aryl sulfinyl groups, heterocyclylsulfinyl groups, sulfamoyl groups, a sulfo group, and heterocyclylthio groups, and the groups may have a substituent; R3 and R4 each independently represent one selected from the group consisting of a hydrogen atom, aliphatic groups, aromatic groups, heterocyclic groups, acyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, carbamoyl groups, alkyl or aryl sulfonyl groups, and sulfamoyl

groups; R5 and R6 each independently represent one selected from the group consisting of a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkyl or aryl sulfonyl group, and a sulfamoyl group, and the groups may have a substituent; and Q represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group ([0147]-[0154]).

{Claim 4}. The ink-jet recording method of claim 3, wherein Z1 is one selected from the group consisting of acyl groups having 2 to 20 carbon atoms, alkyloxycarbonyl groups having 2 to 20 carbon atoms, a nitro group, a cyano group, alkylsulfonyl groups having 1 to 20 carbon atoms, arylsulfonyl groups having 6 to 20 carbon atoms, carbamoyl groups having 1 to 20 carbon atoms, and halogenated alkyl groups having 1 to 20 carbon atoms ([0148]).

{Claim 6}. The cyan dye has an oxidation potential of higher than 0.8 V (vs SCE) ([0241]).

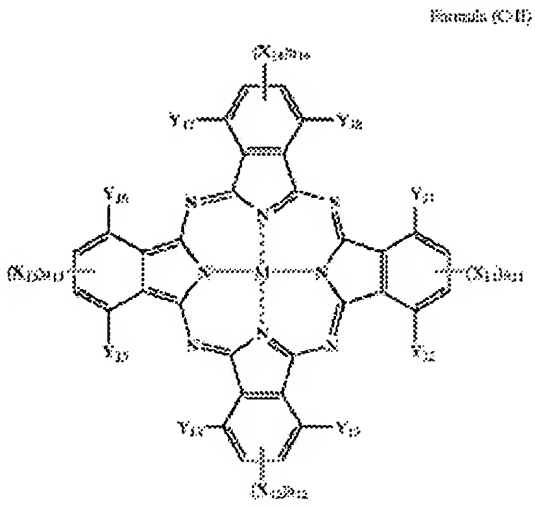
{Claim 8}. The ink-jet recording method of claim 1, wherein the cyan dye is represented by the following formula (C-I):



wherein X1, X2, X3 and X4 each independently represent an electron-withdrawing group having a Hammett's substituent constant σ_p of 0.40 or more; Y1, Y2, Y3 and Y4 each independently represent a monovalent substituent; M represents a hydrogen atom, a metal atom, an oxide of a metal atom, a hydroxide of a metal atom, or a halide of a metal atom; a1 to a4 and b1 to b4 are the numbers of X1 to X4 and Y1 to Y4 respectively; a1 to a4 each independently represent an integer from 0 to 4; b1 to b4 each independently represent an integer from 0 to 4; and the sum of a1 to a4 is 2 or more ([0176]).

{Claim 9}. The ink-jet recording method of claim 8, wherein a1 to a4 satisfy a1=a2=a3=a4=1 ([0204]).

{Claim 10}. The ink-jet recording method of claim 1, wherein the cyan dye is represented by the following formula (C-II):



wherein X11 to X14 each independently represent --SO--Z, --SO2--Z, --SO2NR1R2, a sulfo group, --CONR1R2, or --CO2R1; Y11 to Y18 each independently represent a monovalent substituent; M represents a hydrogen atom, a metal atom, an oxide of a metal atom, a hydroxide of a metal atom, or a halide of a metal atom; a11 to a14 are the numbers of X11 to X14 respectively and each independently represent 1 or 2; Z independently represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group; and R1 and R2 each independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group ([0207]).

{Claim 11}. The ink-jet recording method of claim 10, wherein a11 to a14 satisfy $4 \leq a11+a12+a13+a14 \leq 6$ ([0215]).

{Claim 12}. The ink-jet recording method of claim 10, wherein Y11 to Y18 each independently represent one selected from the group consisting of a hydrogen atom, halogen atoms, alkyl groups, aryl groups, a cyano group, alkoxy groups, amide groups, ureido groups, sulfonamide groups, carbamoyl groups, sulfamoyl groups, alkoxycarbonyl groups, a carboxyl group, and a sulfo group (0213]).

{Claim 13}. The ink-jet recording method of claim 10, wherein M is one selected from the group consisting of Cu, Ni, Zn, and Al ([0223]).

{Claim 14}. The ink-jet recording method of claim 1, wherein the ink-receiving layer comprises particles, and the inks are absorbed into spaces between the particles ([0415]-[0450]).

{Claim 15}. The ink-jet recording method of claim 1, wherein the ink-receiving layer comprises water-soluble resin, and the inks are absorbed into the water-soluble resin ([0434]-[0437]).

{Claim 16}. The ink-jet recording method of claim 1, wherein the ink receiving layer comprises a mordant ([0440]-[0448]).

Yamanouchi et al. differs from the claim of the present invention is that the sulfur-containing compound is at least one selected from the group consisting of thioether compounds, thiourea compounds, sulfoxide compounds, thiocyanic acid compounds, sulfinic acid compounds, disulfide compounds, and sulfur-containing heterocyclic compounds.

Landry-Coltrain et al. teaches that to improve the color fade, ink receiving layer includes the sulfur containing compounds such as thiocyanates, thiourea ([0040]).

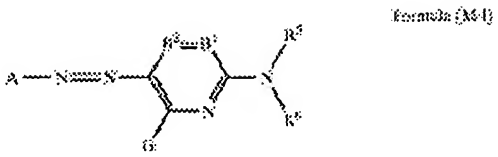
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink-receiving layer of Yamanouchi et al. by the aforementioned teaching of Landry-Coltrain et al. in order to improve the color fade of the printed image, which give more stable printed image.

2. Claims 1-4, 6-7 & 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. (# WO 02/083795) in view of Landry-Coltrain et al. (# US 2003/0138605 A1).

Fujiwara et al. discloses:

{Claim 1,6}. An ink-jet recording method using an ink set for forming an image on an ink-jet recording medium (page: 159, line: 10-25), wherein: the ink-jet recording medium comprises a support and an ink-receiving layer which comprises a sulfur-containing compound (page: 161, line: 10-25) and is disposed on the support; the ink set comprises a yellow ink comprising a yellow dye, a magenta ink comprising a magenta dye, and a cyan ink comprising a cyan dye; and the magenta dye and cyan dye has an oxidation potential of higher than 0.8 V (vs SCE) (see Abstract; page: 157, line: 20-25, page: 158, line: 3-25).

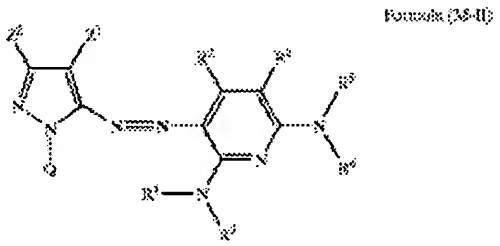
{Claim 2}. The magenta dye is represented by the following formula (M-I):



wherein A represents a residue of a 5-membered heterocyclic diazo component A-NH2; B1 and B2 represent --CR1= and --CR2=, or alternatively one of B1 and B2 represents a nitrogen atom and the other represents --CR1= or --CR2=; R5 and R6 each independently represent one selected from the group consisting of a hydrogen atom, aliphatic groups, aromatic groups, heterocyclic groups, acyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, carbamoyl groups, alkyl or aryl sulfonyl groups, and sulfamoyl groups, and the groups may have a substituent; G, R1 and R2 each independently represent one selected from the group consisting of a hydrogen atom, halogen atoms, aliphatic groups, aromatic groups, heterocyclic groups, a cyano group, a carboxyl group, carbamoyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, heterocyclyloxycarbonyl groups, acyl groups, a hydroxy group, alkoxy groups, aryloxy groups, heterocyclyloxy groups, silyloxy groups, acyloxy groups, carbamoyloxy groups, alkoxycarbonyloxy groups, aryloxycarbonyloxy groups, amino groups, acylamino groups, ureido groups, sulfamoylamino groups, alkoxycarbonylamino groups, aryloxycarbonylamino groups, alkyl or aryl sulfonylamino groups, heterocyclylsulfonylamino groups, a nitro group, alkyl or aryl thio groups, alkyl or aryl sulfonyl groups, heterocyclylsulfonyl groups, alkyl or aryl sulfinyl groups, heterocyclylsulfinyl groups, sulfamoyl groups, a sulfo group, and heterocyclylthio

groups, and the groups may have a substituent; and R1 and R5, or R5 and R6 may bond together to form a 5- or 6-membered ring (page: 9, line: 1-25; page: 10, line: 1-8).

{Claim 3}. The ink-jet recording method of claim 1, wherein the magenta dye is represented by the following formula (M-II):



wherein Z1 represents an electron-withdrawing group having a Hammett's substituent constant .σ_p of 0.20 or more; Z2 represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group; R1 and R2 each independently represent one selected from the group consisting of a hydrogen atom, halogen atoms, aliphatic groups, aromatic groups, heterocyclic groups, a cyano group, a carboxyl group, carbamoyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, heterocyclyloxycarbonyl groups, acyl groups, a hydroxy group, alkoxy groups, aryloxy groups, heterocyclyloxy groups, silyloxy groups, acyloxy groups, carbamoyloxy groups, alkoxycarbonyloxy groups, aryloxycarbonyloxy groups, amino groups, acylamino groups, ureido groups, sulfamoylamino groups, alkoxycarbonylamino groups, aryloxycarbonylamino groups, alkyl or aryl sulfonylamino groups, heterocyclylsulfonylamino groups, a nitro group, alkyl or aryl thio groups, alkyl or aryl sulfonyl groups, heterocyclylsulfonyl groups, alkyl or aryl sulfinyl groups, heterocyclylsulfinyl groups, sulfamoyl groups, a sulfo group, and heterocyclylthio

groups, and the groups may have a substituent; R3 and R4 each independently represent one selected from the group consisting of a hydrogen atom, aliphatic groups, aromatic groups, heterocyclic groups, acyl groups, alkoxycarbonyl groups, aryloxycarbonyl groups, carbamoyl groups, alkyl or aryl sulfonyl groups, and sulfamoyl groups; R5 and R6 each independently represent one selected from the group consisting of a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkyl or aryl sulfonyl group, and a sulfamoyl group, and the groups may have a substituent; and Q represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group (page: 10, line: 9-25; page: 11, line: 1-3).

{Claim 4}. The ink-jet recording method of claim 3, wherein Z1 is one selected from the group consisting of acyl groups having 2 to 20 carbon atoms, alkyloxycarbonyl groups having 2 to 20 carbon atoms, a nitro group, a cyano group, alkylsulfonyl groups having 1 to 20 carbon atoms, arylsulfonyl groups having 6 to 20 carbon atoms, carbamoyl groups having 1 to 20 carbon atoms, and halogenated alkyl groups having 1 to 20 carbon atoms (page: 10, line: 9-25).

{Claim 14}. The ink-jet recording method of claim 1, wherein the ink-receiving layer comprises particles, and the inks are absorbed into spaces between the particles (page: 161, line: 1-25).

{Claim 15}. The ink-jet recording method of claim 1, wherein the ink-receiving layer comprises water-soluble resin, and the inks are absorbed into the water-soluble resin (page: 162, line: 1-15).

{Claim 16}. The ink-jet recording method of claim 1, wherein the ink receiving layer comprises a mordant (page: 162, line: 14-25).

Fujiwara et al. differs from the claim of the present invention is that the sulfur-containing compound is at least one selected from the group consisting of thioether compounds, thiourea compounds, sulfoxide compounds, thiocyanic acid compounds, sulfinic acid compounds, disulfide compounds, and sulfur-containing heterocyclic compounds.

Landry-Coltrain et al. teaches that to improve the color fade, ink receiving layer includes the sulfur containing compounds such as thiocyanates, thiourea ([0040]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink-receiving layer of Fujiwara et al. by the aforementioned teaching of Landry-Coltrain et al. in order to improve the color fade of the printed image, which give more stable printed image.

3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. (# WO 02/083795) in view of Landry-Coltrain et al. (# US 2003/0138605 A1) as applied to claims 1-4, 6-7 & 14-16 above, and further in view of Kawasaki et al. (# US 6338891).

Fujiwara et al. and Landry-Coltrain et al. discloses all the limitation of the inkjet recording method except that a surface of the ink-receiving layer has a pH value of 3 to 8.

Kawasaki et al. teaches that to get the good color printed image, the surface of the ink-receiving layer has pH value of 4.0 to 5.4 (see Abstract; column: 9, line: 20-35).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink-receiving layer of Fujiwara et al. as modified by the aforementioned teaching of Kawasaki et al. in order to have a good color printed image.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanouchi et al. (# US 2002/0107301 A1) in view of Landry-Coltrain et al. (# US 2003/0138605 A1) as applied to claims 1-4 & 6-16 above, and further in view of Kawasaki et al. (# US 6338891).

Yamanouchi et al. and Landry-Coltrain et al. discloses all the limitation of the inkjet recording method except that a surface of the ink-receiving layer has a pH value of 3 to 8.

Kawasaki et al. teaches that to get the good color printed image, the surface of the ink-receiving layer has pH value of 4.0 to 5.4 (see Abstract; column: 9, line: 20-35).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink-receiving layer of Yamanouchi et al. as modified by the aforementioned teaching of Kawasaki et al. in order to have a good color printed image.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manish S. Shah whose telephone number is (571) 272-2152. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Manish S. Shah
Primary Examiner
Art Unit 2853

MSS
8/11/06